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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/630,886

07/30/2003

Arthur R. Alexander

11279 (NCR.0111US)

7940

7590

03/25/2005

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EXAMINER

DINH, TUAN T

ART UNIT

PAPER NUMBER

2841

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/630,886 | Applicant(s) ALEXANDER ET AL. | |
| | Examiner Tuan T. Dinh | Art Unit 2841 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 2-14, 16, 17, 20-24 and 26-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 15 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>02/04/07/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election of Group I (claims 1, 5-15, 18-19, and 22-25) in the reply filed on 12/23/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The applicant is elected Group I (claims 1, 5-15, 18-19, and 22-25). Claim 2 is withdrawn from further consideration as being drawn to non-elected claim (see the reply filed on 09/10/04), and claims 3-14 are depended on claim 2. Also, claim 20 is withdrawn from further consideration as being drawn to non-elected claim (see the reply filed on 09/10/04), and claims 21-24 are depended on claim 20. Therefore, claims 2-14, and 22-24 are withdrawn from further consideration as being drawn to non-elected subject matter.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "the capacitor 300 in figures 7, 9-10" as described in the specification.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if

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only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Henderson et al. (U.S. Patent 4,777,718, hereafter Henderson).

As to claim 1, Henderson discloses a circuit board (10), see column 2, line 65, and column 3, lines 29-31 as shown in figures 1-6 comprising:

first and second reference plane layers (30, 32), see column 3, lines 6, 23, and 32-34;

a dielectric layer (18; 36; 20) between the first and second reference plane layers (30, 32); and

a resistive element (44), see column 3, lines 52-54, between the first and second reference plane layers.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henderson et al. (U.S. Patent 4,777,718) in view of Chakravorty (U.S. Patent 6,611,419)

As to claim 18, Henderson discloses all of the limitations of the claimed invention, except for the circuit board further comprising a plurality of decoupling capacitors between the first and second reference plane layers, wherein the dielectric layer comprises a template having plural holes to receive the decoupling capacitors.

Chakravorty teaches an electronic assembly comprising a multilayer substrate (410), see figure 4, having holes to receive decoupling capacitors (430, 440), the capacitors (430, 440) are formed between reference plane layers (Vcc, Vss), see figure 4.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have decoupling capacitors formed into holes and formed between reference plane layers, as taught by Chakravorty, employed into circuit board of Henderson in order to provide a high power delivery.

As to claim 19, Henderson discloses a system as shown in figures 1-6 comprising:

- a circuit board (10) comprising:

- first and second reference plane layers (30, 32);

- a dielectric layer (18; 36; 20) between the first and second reference plane layers, and

- a resistive element (44) between the first and second reference plane layers.

Henderson does not disclose the circuit board having an integrated circuit (IC) mounted on.

Chakravorty teaches an IC die (400) mounted on a multilayer substrate (410), see figure 4.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have an IC chip mounted on a circuit board, as taught by

Chakravorty, employed in the circuit board of Henderson in order to perform an IC package structure.

Allowable Subject Matter

7. Claims 15 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For claims 15 and 25, The references cited do not disclose or render obvious in combination of the circuit or the system having the resistive element comprises a discrete resistor having one end electrically connected to the first reference plane layer, the circuit board further comprising a decoupling capacitor having first and second electrodes, the first electrode electrically connected to another end of the discrete resistor, and the second electrode electrically connected to the second reference plane layer.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gottlieb, Sunuhara, and Novak disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Tuan Dinh', with a long, sweeping horizontal stroke extending to the right.

Tuan Dinh
February 16, 2005.